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This is the first issue of the QL Report printed with FRONT PAGE by Gap Software. We probably will do the first page of the QLR every month using this program but the rest of the Report will be in our old-style format. Because FRONT PAGE does not justify text it is a little too hard to use for all 4000 words or so of QLR but we do like the program and want you to see how it works.

Programs like FRONT PAGE show the resiliency of Sinclair technology. Here is a program that is very reasonably priced and can do on the QL what it would cost at least a few hundred dollars to do on any other computer. The odds are excellent that within a few months we will see updated versions of this program which will justify, word-wrap, etc. etc. The new software and hardware which is coming out for the QL is definitely exciting!

The QL TALKER was reviewed very favorably in the January issue of QL World magazine. It is nice to see that magazine giving more and more space to American products. Hopefully this trend will continue with hardware like the TALKER and with programs like CONCEPT 3D, OLTERM, WAR IN THE EAST, SUPER CHECKING, etc. It is also nice to see business programs like TAXIOL coming out which are specifically written for the U.S. business market.

Service Merchandise stores which are out here in the West have been offering the Magnavox RGB monitor for \$249.95 which is a very good price. Cables can be made to hook up to the QL to give a very nice color display. For those of you who do not feel the need for a color monitor, remember that most composite mono monitors will work if they have an RCA din plug and going into the monitor. A green or amber display might be all you need if you are mainly interested in word processing or other business applications.

We have been experiencing a problem with "tested" QL's from our distributor. It seems that neither they (nor we) had been checking the TV port-most people buying QL's seem to be hooking them up to RGB color monitors or composite monochrome. The TV port on a fair amount of QL's seems to be defective. We are now checking both TV and RGB ports before we ship out. Sometimes, the TV port will not work but the RGB port will work fine. We also have had one case where a customer tried the TV port on a checked computer, found it did not work and then tried the RGB port and that too all of a sudden failed to work. We had the same thing happen on one of the machines we were testing.

So, we will check both from now on and advise any of you who are contemplating purchasing a first (or second, third, etc) QL from any source, to make sure you tell the dealer if you are going to be running on a TV.

We want to again draw your attention to the fact that the mailing label on your QL Report now shows how many issues you have left in your subscription. Using a procedure from within ARCHIVE we have a field in our subscription database called issues. All we do is write a procedure that prints an address label if a customer has "issues>0." This is done with simple LPRINT statements for name, address, etc. After the label is printed, the procedure subtracts one from issues (let issues=issues-1) and then using the UPDATE command, this is recorded in the person's file. Since the number of issues left in the subscription is not decremented until after the label is printed, we use "LPRINT issues-1" to show the correct number of issues you have left before you have to renew.

The basis for all of our QLR procedures can be found in the USER GUIDE. All we did was take the idea and refine it a little. If you have something to start with, procedures really are fairly simple to write and execute. Any of you who have newsletters or user group magazines or club reports that go out to paying subscribers should use ARCHIVE.

We would like to hear from any of you out there who are using your QL for different types of applications other than the standard word-processing, etc. We know they are being used in churches, to create special effects in movies, to teach programming in universities and colleges, but we want to relate to other users just how useful you have made your QL-either in the home or the office.

We have Digital Precision's Turbo Compiler on order and hear that it is better than QLiberator because it compiles full 68000 code while QLiberator only uses a form of P-code which is interpreted by the run-time system. We hope to have reviews on both of these compilers within the next few months.

There are a number of QL keyboards coming onto the market within a few months or so. Schon has one that is made up of two units, the actual keyboard part and the replacement housing part for your QL. The housing part still will allow you to run all your existing peripherals. No soldering is required and it supposedly only takes five minutes to be able to put it together.  
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Saga Systems, who are a company making excellent keyboards for the ZX81 and the Spectrum are going to be coming out next month with two keyboards for the QL, one of which will be infra-red. We'll have more info in March.

As you can see, we are using quite a variety of type-styles for the "front page" of our QLR. The program is really quite easy to use once you get the hang of it. We found, however, that if you are making a disk version, it is best to keep your temp file on a separate disk. For some reason when we had everything on the same disk, it kept crashing out of the program and corrupting the main program so we would have to make a copy all over again.

We now have toggled the character set from "QL" to "BLT" and this is what the type looks like. We are using the Sinclair QL printer to print all this. The more we use FP, the more we like it.

We will not be attempting to use any of the GBC's or graphics capabilities of FP in this issue for two reasons, one we haven't learned how to get and two we are not very artistically bent anyway. But, in some future issues we will be exploring the graphics possibilities of this fine program. If any of you out there have done graphics using FP or have a one page article using text and graphics, send it in.

It would be nice to start seeing user group publications begin using this program. For classified ads or small advertising space FP would design a newsletter or other similar type of publication very easily. The only serious drawback to it is the fact you have to constantly proof-read and correct as you go.

We have received from Dennis Briggs in England a test cartridge to check out your QL (it checks the keyboards, microdrives, etc) and on it is a QUILL document which discusses how to fix various parts of your machine, what chips do what, etc. We reprint it here with his kind permission. This month deals with hardware. Next month will deal with various modifications you can do to your computer.

#### QL Computer Hardware

The QL has undergone only two design changes during its varied fortunes from a hardware point of view leading to the conclusion that either it was nearly right from the word go, or it is so awful that very little can be done with it. Events taking place subsequent to its launch confirm that it is a good machine that has many advanced features as well as microdrives which are OK but not everyone's cup of tea. It is significant that a fairly major design change took place at build no.14 moving from Issue 5 to Issue 6 boards. Issue 0,1,2,3 & 4 boards have not been encountered leaving one to assume they were R & D material.

Reference will simply be made to Issue 5 or Issue 6 boards as build numbers such as D05, D11, D16 etc. also AH,JM,JS ROM's are not significant from the hardware aspect. The only certain way to ascertain what is inside the black box is to open it up and examine the board. This is achieved by turning the QL over to gain access to eight cross-head screws. There being four short ones under the front lip and four long ones in line with the legs. Do not remove screws from under the microdrives at this stage. Use a new screwdriver with the point covered in cling film to obviate an amateur chewed screw look.

Lift the keyboard up gently noting two wide flat strips which are the membrane connector tails. Grasp these between finger and thumb pulling gently but firmly vertically upwards. There is no need to disconnect anything else at this stage.

Re-assembly is simple, with the membrane tails being carefully inserted by a gentle downward movement ensuring that they are not creased which could break the internal track. Also check that the tails are not folded over in the socket as this will prevent some keys from functioning.

The issue number is on the board in three places, but the two different boards are easily identified by looking to the right of the ROM chips. If it contains a HAL 16L8 chip, it is Issue 6. Issue 5 boards employed a 74LS03 chip.

The various ic's (chips) will be dealt with purely from a servicing aspect laying particular stress on practicality. No attempt will be made to discuss the technical merits of a particular ic or to propose extensive modification to the circuit involving spaghetti wiring.

Purchase of the QL Service Manual is strongly advised and at least some practice made on soldering small components before embarking on any updates or projects. It is essential that correct means be employed in extracting ic's as levering with screwdrivers etc. will damage the board as well as the ic. Pcb's are not available as replacement parts consequently damage of a serious nature will scrap the machine. As always it is advisable to work on baking foil but most of the ic's appear to be fairly robust.

Two ULA's are used on the main board and one on each microdrive. The microdrive ULA is the same as the SPECTRUM microdrive ULA. It goes off pop occasionally probably due to it being fed large doses of heat from the 5 volt regulator heatsink, its own heat and heat from the motor. It is not easy to replace on mdv1 and a socket cannot be used as the ULA is jammed up to an ic on the board with a insulated screen in between. Leaving the screen off produces more heat, smoke, damage and anguish. The microdrive pcb is not available as a replacement part which is a pity as chip failure can damage the board.

Fastened to the board is also the microdrive READ/WRITE head. Not unknown to fail but expensive to replace. It is only available as a 'sub-assembly' being a bog standard stereo tape head on a plastic mounting. Thus two parts become a sub-assembly !!!.

Microdrive ULA's arrive adorned with a variety of coloured spots, white ones, pink ones etc. They must mean something but do not appear to have any performance significance.

Rattles heard whilst microdrive are spinning indicate the rubber drive rollers are not perfectly true or more probably the roller in the cartridge is not true. Replacement of the microdrive rubber roller is easy with a bit of glue to make sure they stay in position.

Microdrive 2 has a useful space under it which will be later utilised when the battery back-up is explained.

Turning to the main board, one of the most frequent replacements is the ROM chips. There are two which must be replaced as a pair. You can't get away with updating the one chip. Usually owners want to update to a JS ROM which is easy even if you have an AH. Just extract the two chips and insert the new ones the correct way round. Have a look at the JS ROM chips as the colour spots again appear (blue ones usually) and a leg disappears from the 128k chip. It is one of the 5 volt supplies. Don't worry it works OK.

Whilst the top is off the QL it is worth considering how much keyboard bashing you do and the consequences of a keyboard failure at a critical time. Murphy's law will cause it to fail on something important. Replacement of the switch contacts is by means of fitting a new keyboard membrane being both cheap and easy, after the aluminium plate has been removed. A bubble mat provides the 'springs' for the keys so there may be good reason for fitting a new one of these at the same time. The ultimate I suppose is to invest in a proper PC type serial keyboard plugged into SER2. Be careful when refitting the upper case to the lower, as any poor

contact on the six LED connections stops the appropriate microdrive.

Back to the main board to have a look at the ULA which controls the serial ports and the microdrives. It is a ZX 8302 having a 5 volt supply on pin 40 & pin 11 with pin 40 being fed through a link.

Links in the QL are zero ohm resistors. That is, they look exactly like a resistor making it easy for automatic mechanical insertion but with a single black band to indicate the value. Even though the circuit diagram shows a link for both Issue 5 & Issue 6 boards, in practice, only Issue 5 has this present at the side of SER1 port marked D22. That's right. Issue 5 board has a link which looks like a resistor, in a position marked for a diode, with another position at the side for another diode D23.

For some reason Sinclair decided to redesign this area on Issue 6 boards. Part of the ZX 8302 provides the clock for the QL with all the hassle of having to reset it frequently, but if the chip can be permanently powered then the date and time would remain correct.

To implement this change, replace the link in position D22 with a small diode together with a further diode in D23. A small 3.8 volt rechargeable battery connected to the points marked BATTERY (under the heatsink) and fastened with sticky pads under microdrive 2 does the trick. For purists, something like a 270 ohm resistor in the positive lead will restrict the charging current.

On Issue 6 boards this simple approach is not possible due to changes in the track layout. The only practical solutions being to isolate pin 40 either by bending it out, cutting it or the track, after which the same type of battery can be connected by soldering. PDS (+) to pin 40, NEG (-) to regulator common.

Staying with the ZX 8302 provides a further item of interest in that colour spots are not used but marking codes are.

Example:-

ZX 8302 NCR0371275 USA F812119 F8416  
ZX 8302 NCR0371275 USA F812877 F8431

In my experience, a change of chip significantly improves microdrive handling, but it is pure conjecture as to whether the ZX 8302 is faulty or if chips of later manufacture are of an improved quality.

Moving on to the next ULA, namely the ZX 8301, a similar situation arises in that different markings appear to coincide with differing performance.

ZX 8301 markings:-

PS P 02 CLA2310 Y8408B

PS P B CLA2345 8544C ZX8301 Sinclair 1983

Jittery monitor displays usually respond to the replacement of the ZX 8301 with a loss of colour requiring a new MC 1377p. Squirt the MC 1377p with freezer to restore your QL to full colour until it warms up again. This trick also produces some amazing results on other chips as does running the machine with the top off. Indications therefore are that it gets a bit hot inside and some ventilation would help in conditons of high ambient temperature.

The reported machine crashes can be reduced by cooling the machine but for real improvement the 7805 5 volt regulator requires attention both in the QL and in any add-ons. A 100 nf capacitor must be soldered between input and common on the chip not some distance away. It is part of the specification and is cheerfully ignored by some manufacturers of computers to the detriment of the performance. The knitting of three platefuls of spaghetti hanging out the back is asking for trouble. Keep wires neat and well away from each other, especially the power lead, mains lead and VDU lead. I suggest you use a curly VDU lead and run the power lead to the right of the machine. Running the TV or monitor slap up against the QL is bad practice not only for the QL but it is in a poor position to be viewed without strain. If possible the interior of the QL casing should be sprayed with electrically conductive paint and two 7805 regulators paralleled up with the use of liberal doses of heat-sink compound. Any regulators in add-on boards must be checked to make sure they are contacting the heat-sink and again use heat-sink gung. Do not forget the capacitor across the input to the regs to remove any possibility of oscillation.

The two remaining large chips are the 68008 CPU and the MAB 8049 co-processor both of which appear to be reliable. The 8049 receives the RS 232 interface signals, monitors the keyboard, controls the loudspeaker & controls the joystick. A simple but effective test is to plug SER1 into SER2 then get the computer to talk to itself by some BASIC software. A joystick test can also be incorporated as well as a colour and sound test. This pretty-well proves the system. A RAM test requires a m/c routine but if there is a RAM failure it is usually visible as a black line on the tweed start-up screen or with a completely green or white screen.

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We have "received" TURBO, Digital Precision's new compiler but say it in this way because when you buy the package you only get TURBO TOOLKIT. You then fill out a registration card and send it to DP in England and they will send you your own personal copy of TURBO. We regret that it is done this way but that is their policy. Of course, what you do get right away is the Turbo Encyclopedia which consists of over 300 pages of information so maybe it is better to have to wait for the main program until you have time to read the extensive documentation.

We have a THOR in transit--strictly a bare bones one. We want to see whether it is practical from a cost viewpoint for the U.S. market. We will be piecing it together by next issue and give you are impressions on this first of the QL clones. CST's Graham Priestley informed us the machine is selling quite well and that they are quite pleased with the number of orders they have received to date.

Barry Ashfield of Psientific Software has a new version of QL SWITCH out. We also have his excellent KEYDEFINE, R\_WINDOWS, QCALC, and ICECICLE. He writes:

"...QL SWITCH to evaluate. Note that this includes a built-in calculator which will print the calculation result to the calling job eg. QUILL or ABACUS. Unlike some other switch routines on the market QL SWITCH will run with other multi-tasking routines eg. KEYDEFINE and can be used with the I.C.E. ROM to replace the .. CHOICE program.

I am at the moment updating QL SWITCH to allow printing from one version of QUILL, while working on a document on a second QUILL and also adding various utilities( keydefinition, clock, Caps status, Memory status). In addition, the tasks can be changed at runtime. "

The newest version of KEYDEFINE now has a print spooler to be used in conjunction with QUILL. It also includes the ability to add any number of translate keys and has a beeping CAPS LOCK key.

For those of you interested in multi-tasking we also want to remind you about SWOPPER by Compware. Unlike ICE which only allows you to have four programs multi-tasked at once, SWOPPER allows you to have up to nine tasks loaded at the same time and will also allow you access to BASIC. ICE does not allow access to BASIC. Any program that can be run with the EXEC\_W command will work with SWOPPER.

A QL owner in Texas needs help installing his QL with an Okidata 82A printer. If any of you have this particular printer and can help, please write to: Guerra Marine Supply  
10203 Market Street #B  
Houston, TX 77029

He also would like information on installing a daisy-wheel printer.

And, any QL owners who have Metacomco's LATTICE C, below is the name of a gentleman who is interested in starting a QL 'C' users group. You may contact him for more information: Terry Cotant  
32861 Merritt  
Westland, MI 48185

We have received Talent's SIDEWAYS program but have found it to still have a few bugs so we are holding up shipment to customers until we hear from the author. We tried printing a spreadsheet with a range of A1:AR200 and it did not print properly. One thing that is disappointing is that at this point in time you cannot use the Sinclair printer with the program. It requires user defined graphics and must be completely Epson-compatible in order to work. Talent is also working on that problem.

We found an interesting bug in QUILL which is probably due to user error but we cannot figure out how it happened. While preparing the Report this month we merged in some information (which we have done before on numerous occasions) and while proof-reading noticed all of a sudden that page three was 26 lines long and page five was 14 lines! Under design we had left a 66 line page as standard. No matter what we did, we could not reconfigure those two pages back to 66. Changing the margins, re-justifying, changing footers, etc. did not help.

When we went to print, the "what you see is what you print" advantages of QUILL turned into negatives as pages three and five were printed "short." The only way we found to correct the situation was to PRINT the file as a \_lis file and then IMPORT it by line into QUILL. We don't know if this has ever happened to you (we certainly hope not) but if you ever find yourself with this strange occurrence and all else fails, try the above.

Next month we should begin detailed reports on THOR. We will hopefully have SIDEWAYS bug-free and will also be reviewing QIMP and TOOLSET and possibly PCB2, all by Talent. We also have STRIP FOKER and OXFORD TRIVIA in transit from Talent.

Until next month, enjoy your QL.